II. REMARKS

Claims 1-19 are pending. The Applicant's attorney has amended claim 2. In light of the following, all of the claims as amended are now in condition for allowance, and, therefore, the Applicant's attorney requests the Examiner to withdraw all of the outstanding rejections. Furthermore, if after considering this response the Examiner does not allow all the claims, the Applicant's attorney requests that the Examiner contact him to schedule a teleconference to further the prosecution of the application.

Rejection of Claims 1, and 4-19 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Prior Art FIG. 2 Of the Patent Application in view of U.S. Patents 6,218,750 and 6,675,656 to Nakagawa and Sondermeyer

As discussed below, the Applicant's attorney disagrees with, and thus requests withdrawal of, this rejection.

Claim 1

Claim 1 recites a network operable to generate a back EMF signal by removing a predetermined offset voltage from a tap voltage of brushless-motor coil.

For example, referring, *e.g.*, to FIGS. 4-5 and the corresponding text of the patent application, while a coil A of a sensorless, brushless DC motor is floating, an offset network 50a generates a back EMF signal Ea by removing a predetermined offset voltage (equal to ½ of the forward voltage across the diode Dgb) from the tap voltage Va. By removing the offset voltage, the network 50a allows the zero-crossing detector 52a to more accurately detect the zero crossing of ea, which is the back EMF voltage induced in the coil A. Because the motor uses the zero crossing of ea to commutate the motor phases, a more accurate detection of ea's zero crossing allows better commutation (*e.g.*, less jitter).

In contrast, the combination of prior-art FIG. 2, Nakagawa, and Sondermeyer would not have motivated one to develop a network for generating a back EMF signal by removing a predetermined offset voltage from a tap voltage of a brushless-motor coil.

Although FIG. 2 discloses a drive circuit for a sensorless, brushless motor, it neither discloses nor suggests a network or other means for removing an offset voltage from a tap

voltage. That is, FIG. 2 illustrates the reason for the offset voltage and the problems it causes, but does not disclose or suggest removing the offset voltage.

Furthermore, because Nakagawa discloses only a sensor-type brushless motor, one would not have been motivated to combine the teachings of Nakagawa with the sensorless, brushless motor of FIG. 2. Generally, there are two different techniques for commutating the phases of a brushless motor. The sensor-based technique uses sensors to sense the position of the motor, and the sensorless technique senses the zero crossings of the back EMF voltages in the motor coils when they are electrically floating. Because the zero crossings correspond to known motor positions, the sensorless technique effectively uses the motor coils as postion sensors, and thus allows elimination of external sensors and their associated circuitry. Nakagawa discloses a sensor-based technique. Specifically, referring to FIG. 7, Nakagawa discloses magnetoresistance effect elements (sensors) 20a-20c for detecting the motor position, which the control means 34 uses to commutate the motor. Because the sensors 20a-20c have respective offset voltages, Nakagawa discloses offset removing means 30. But because the sensor and sensorless techniques are fundamentally different, one attempting to solve a problem related to the sensorless technique would not be motivated to look at the sensor-type prior art.

Furthermore, because Sondermeyer discloses nothing about brushless motors, but merely discloses that a voltage drop can occur across a diode, one would not have been motivated to combine the teachings of Sonermeyer with those of Nakagawa and the sensorless brushless motor of FIG. 2. Furthermore, Sondermeyer discloses nothing about removing the voltage drop across the diode.

Consequently, because Nakagawa merely discloses a sensor-type brushless motor and because Sondermeyer discloses nothing about brushless motors, one would not have been motivated to combine these references with FIG. 2 of the patent application to arrive at the invention recited in claim 1. Furthermore, even if one were so motivated, the combination of FIG. 2, Nakagawa, and Sondermeyer at most suggests compensating for an offset voltage of a dedicated motor-position sensor, and, therefore, does not suggest removing an offset voltage present at the tap of a motor coil.

Claims 8, 11, 16-17, and 19

These claims are patentable for reasons similar to those recited above in support of the patentability of claim 1.

Allowable Subject Matter

The Applicant's attorney has amended claim 2, which the Examiner objected to, into independent form, and, therefore, requests withdrawal of the object to claims 2 and 3 (claim 3 depends from claim 2).

Conclusion

In light of the foregoing, claims 1 and 3-19 as previously pending and claim 2 as amended are in condition for full allowance, which is respectfully requested.

In the event additional fees are due as a result of this amendment, payment for those fees has been enclosed in the form of a check. Should further payment be required to cover such fees you are hereby authorized to charge such payment to Deposit Account No. 07-1897.

If the Examiner believes that a phone interview would be helpful, she is respectfully requested to contact the Applicant's attorney, Bryan Santarelli, at (425) 455-5575.

DATED this 26th day of October, 2004.

Respectfully Submitted,

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I. AMENDMENT

In the Drawings:

Applicant has added "(Prior Art)" on FIGS. 1-3. Attached is a set of formal drawings, appropriately labeled Replacement Sheets containing those changes. No new matter has been added to the figures.